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Extramedullary plasmacytoma of the orbit complicating the evolution of multiple myeloma in complete remission

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ABSTRACT

Orbital plasmacytoma is rare and has only been reported in the context of the initial diagnosis of multiple myeloma. Moreover, isolated orbital plasmacytoma without any signs of multiple myeloma is extremely rare.

We report the case of a 59-year-old female patient diagnosed with IgA Kappa multiple myeloma. It was stage I ISS (International Staging System) and stage I R-ISS (Revised ISS). According to the Tunisian national protocol, the patient was included in the standard-risk group and was eligible for four cycles of CTD (Cyclophosphamide, Thalidomide, Dexamethasone) followed by autologous stem cell transplantation. Taking into account the partial response after the CTD cycles, the patient has benefited from two VTD cycles (Bortezomib, Thalidomide, Dexamethasone). Thus, complete remission was obtained. The patient refused autologous stem cell transplantation. Therefore, maintenance treatment based on Thalidomide only was started and received over a twelve-month period.

Five months after the end of maintenance treatment, she reported frontal headaches that were resistant to symptomatic treatment, with ptosis in the right eye in physical examination. Brain MRI revealed the presence of a right cranio-orbital tissue mass with intra-orbital and extra-axial cerebral components. The mass measured 32/36 mm on axial sections and 47 mm in height. The patient underwent a complete resection of the cranio-orbital mass with cranioplasty. The histopathological examination of the mass with Immunohistochemistry staining confirmed the diagnosis of orbital plasmocytoma.

An update of the multiple myeloma assessment did not reveal any biological, cytological or radiological signs in favor of multiple myeloma. Therefore the diagnosis of isolated orbital plasmacytoma without signs of multiple myeloma was made.

Post-operative brain MRI showed complete disappearance of the right cranio-orbital tissue lesion. There was only a persistent meningeal enhancement of the dura mater at the surgical site, suggestive of post-operative changes. The patient was then referred for cranio-orbital radiotherapy.

1. Introduction

Plasma cell neoplasms represent a monoclonal proliferation of plasma cells, that could manifest as a systemic disease notably multiple myeloma (MM), or as localized disease such as extramedullary plasmacytoma (EMP) or solitary bone plasmacytoma (SBP) [1].

Orbital plasmacytoma is rare and has only been reported in the context of the initial diagnosis of multiple myeloma [2]. Moreover, isolated orbital plasmacytoma without any signs of multiple myeloma is extremely rare. We report in this observation a case of extramedullary plasmacytoma which was the only manifestation complicating the evolution of a multiple myeloma in remission.

2. Case report

A 59-year-old female patient presented with pain in the right hip, accompanied by right sciatica without sensory or motor deficits. A complete blood count (CBC) has been conducted revealing normochromic, normocytic, and aregenerative anemia with an hemoglobin level of 9.4 g/dL. A serum protein electrophoresis (SPEP) showed a monoclonal peak in the B2 zone measuring 30.3 g/L. Immunofixation concluded to the presence of IgA Kappa monoclonal antibody. Bone marrow

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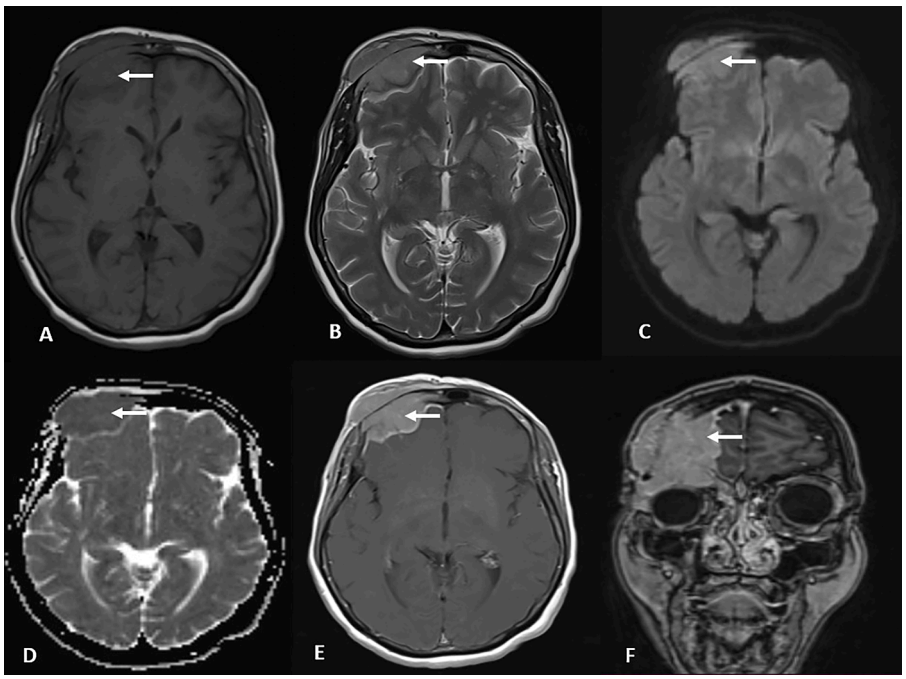

Fig. 1. Brain MRI in axial sections in T1-weighted (A), T2-weighted (B), Diffusion-weighted (C), ADC mapping (D), T1-weighted post-contrast (E), and Gadolinium-enhanced coronal T1-weighted (F) images: A right frontal extra-axial cranio-orbital expansive process (arrow) showing iso signal intensity on T1-weighted, slight hypersignal intensity on T2-weighted with restricted diffusion, and moderate homogeneous enhancement after Gadolinium injection. It is causing bone lysis.

examination revealed 15% clonal plasma cells with the presence of atypical plasma cells. The serum-free light chain assay showed the following results: Kappa (K)= 1190 mg/L; Lambda (L)= 9.49 mg/L, with a K/L ratio of 125. Calcium and creatinine levels were within normal range. Concerning prognostic factors, the Beta-2 microglobulin level was 3.41 mg/L, albumin level was 36 g/L, and lactate dehydrogenase (LDH) level was 170 IU/L (normal range). Fluorescent in situ hybridization (FISH) did not reveal any cytogenetic abnormalities. Therefore, the diagnosis of IgA Kappa multiple myeloma was established. It was stage I ISS (International Staging System) and stage I R-ISS (Revised ISS). According to the Tunisian national protocol, the patient was included in the standard-risk group and was eligible for four cycles of CTD (Cyclophosphamide, Thalidomide, Dexamethasone) followed by autologous stem cell transplantation. After the four cycles of CTD, the patient had a partial response and she has benefited from two VTD cycles (Bortezomib, Thalidomide, Dexamethasone). Thus, complete remission was obtained and the SPEP showed the disappearance of the monoclonal peak. The patient refused autologous stem cell transplantation. Therefore, maintenance treatment based on Thalidomide only was started and received over a twelve-month period. She was then regularly followed up.

The latest checkup 5 months after the end of maintenance treatment showed no bone pain, and her blood tests (CBC, creatinine, calcium) were within normal limits. The SPEP was normal. However, she reported three weeks frontal headaches that were resistant to symptomatic treatment, with a ptosis in the right eye. Brain MRI revealed the presence of a right cranio-orbital tissue mass with intra-orbital and extra-axial cerebral components. The lesion was T1 isosignal intensity, T2 slight hyper signal intensity with restricted diffusion, and moderate homogeneous enhancement after Gadolinium injection. The mass measured 32/36 mm on axial sections and 47 mm in height. [Fig. 1A–F]

The patient underwent a complete resection of the cranio-orbital mass with cranioplasty. The histopathological examination of the mass revealed a proliferation of fairly monomorphic cells with a plasmacytoid appearance, characterized by round, often eccentric nuclei, pushed towards the periphery. Immunohistochemistry staining revealed that majority of the plasma cells expressed intensively CD138, while CD99 and synaptophysin immunostaining were negative. [Fig. 2A, B]

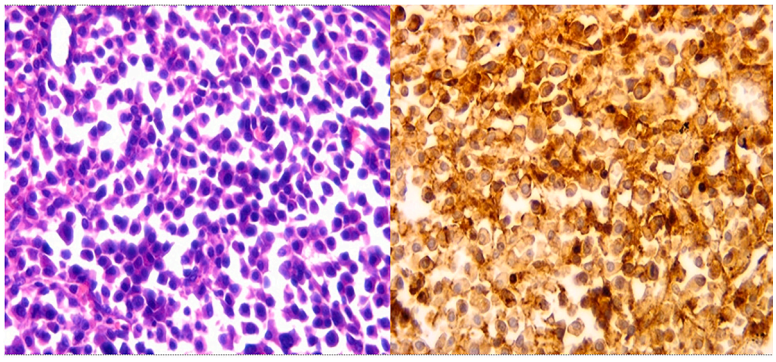

Fig. 2. (A) Proliferation of fairly monomorphic cells with a plasmacytoid appearance, characterized by round nuclei with radial spokes, often eccentrically located, and pushed towards the periphery (Hematoxylin and Eosin stain, 400x magnification). **(B)** Intense cytoplasmic staining with CD138.

An update on the multiple myeloma criteria, showed an hemoglobin level of 11 g/dL, with no hypercalcemia or renal insufficiency. Radiological assessment did not reveal any myeloma-related bone lesions. The SPEP did not show any abnormalities, and the serum-free light chain assay was normal. The bone marrow examination did not reveal any excess of plasma cells. Post-operative brain MRI showed complete disappearance of the right cranio-orbital tissue lesion. There was only a persistent meningeal enhancement of the dura mater at the surgical site, suggestive of post-operative changes. The patient was then referred for cranio-orbital radiotherapy.

3. Discussion

Extramedullary plasmacytoma (EMP) represent 3 % of all plasma cell tumors [3]. They are frequently seen in patients with a median age of 50–60 years with male predominance [4]. Histological confirmation using immunohistochemistry remains essential for making the diagnosis of EMP [5].

Nearly 80–90 % of EMP cases arise in cranio-cervical structures (nasal and paranasal cavities, nasopharynx, larynx, tonsils, upper aerodigestive tract), representing less than 1 % of the head and neck malignant lesions [6]. Other sites such as salivary glands, parathyroid glands, thyroid, skin, breasts, lungs, the urogenital and gastrointestinal tracts, lymph nodes, eyes and central nervous system are uncommon [6].

Orbital involvement in MM is uncommon, with fewer than 50 cases reported in the literature. Moreover, orbital plasmacytoma without signs of MM is extremely rare [2]. Chattapadhyay S et al. reported the first case of orbital plasmacytoma in the right eye of an Indian patient, in whom investigations for MM were negative [2]. Our case differs in that the patient was in complete remission after treatment for MM, and the extramedullary plasmacytoma was part of a localized relapse.

Orbital plasmacytoma frequently presents with progressive proptosis [7]. Furthermore, ophthalmic manifestation could include ptosis, diplopia, reduced visual acuity, chemosis and restricted extraocular movements. Whereas, ocular pain is infrequently described [8].

Concerning radiological investigations, MRI is superior to CT scan in characterizing tumor masses, it cannot confirm the diagnosis of plasmacytoma and distinguish it from other neoplasia [3]. Given the previously mentioned challenges in diagnosis and the lack of specificity in clinical and radiological findings, the diagnosis of EMP is basically histological [5].

Radiotherapy remains the treatment of choice given the high radiosensitivity of these tumors. However, the role of adjuvant chemotherapy to prevent the risk of progression to multiple myeloma remains controversial [4]. In our case, we opted for radiotherapy alone, considering the radiosensitivity of this type of lesion.

4. Conclusion

To the best of our knowledge, this is the first case of isolated orbital plasmacytoma complicating the course of a multiple myeloma in complete remission. During the follow-up of this hematological malignancy, clinical signs such as headaches and ptosis should raise suspicion of cranio-orbital plasmacytoma, even if the disease appears to be controlled.

Patient consent statement

Informed consent from the patient and authorization for publication of the case has been obtained

CRediT authorship contribution statement

Nader Slama: Writing – original draft. **Inaam Bizid:** Writing – original draft. **Ahlem Bellalah:** Writing – original draft. **Mabrouk Abdelali:** Writing – original draft. **Mohamed Adnene Laatiri:** Supervision.

Declaration of competing interest

The authors declare that they have no conflict of interest.

References

[1] R. Chandrasekharan, G. Ashish, H. Parmar, A rare case of sinonasal extramedullary plasmacytoma with orbital involvement, Int. J. Head Neck Surg. 6 (3) (2015) 121-4, sept.
[2] S. Chattapadhyay, A. Saha, A. Mukherjee, M. Azam, Extramedullary plasmacytoma of the orbit: a rare case, Clin. Cancer Investig. J. 2 (2013) 163–165.
[3] K.N. Dholakiya, T.V. Soni, Extramedullary fronto-orbital plasmacytoma- a rare tumour, IP Indian J. Neurosci. 5 (1) (2019) 32–34.
[4] Physician of the Internal Medicine Service of Nova Iguaçu General Hospital L. B. Gomes, J.D.S. Lima, V.C. Silveira, et al., Orbital extramedullary plasmacytoma: case report and literature review, Gaz. Med. Sci. 1 févr 2 (1) (2021) 26-9.
[5] A.B. Huggins, J.R. Carrasco, J.J. Evans, M.P. Rabinowitz, Solitary extramedullary plasmacytoma of the orbital apex and dura masquerading as idiopathic inflammation, Ophthal. Plast. Reconstr. Surg. 33 (3S) (2017) S92-4, mai.
[6] Andreia Margarida de Matos, André Goulard, André Ribeiro, Ricardo Freitas, Catarina Monteiro, Paulo Martins, Orbital plasmacytoma, an uncommon presentation of advanced multiple myeloma, Eur. J. Case Rep. Intern. Med. 7 (3) (2020) 1, 31 janv.
[7] S.P. Kelly, I.C. Lloyd, H. Anderson, P.W. Joyce, A. Pace-Balzan, Solitary extramedullary plasmacytoma of the maxillary antrum and orbit presenting as acute bacterial orbital cellulitis, Br. J. Ophthalmol. 75 (7) (1991) 438-9, 1 juill.
[8] D. Barmas-Alamdari, G.S. Sodhi, T.A. Shenouda, Bilateral proptosis in a case of recurring multiple myeloma: uncommon orbital presentation of plasmacytoma, Int. Med. Case Rep. J. 13 (2020) 297-301, juillVolume.